Fig. 3 depicts a set of curves representing the bit error rate BER as a function of the signal to noise ratio Eb/No respectively in the case of a perfect channel estimation and in several cases of imperfect channel estimation for different pilot symbol transmission powers Q_1 to Q_4. The required error rate BER_0 has been shown in this Fig. 3.

On the curve for perfect channel estimation, the operating point P has been shown. From this operating point P, it is possible to determine the variance $\sigma^2_{N,perfect}$ of the corresponding noise. This determination can be done graphically but also sometimes analytically by methods known to persons skilled in the art.

By means of the above expression (11), it is possible to determine a total interference variance $\sigma^2_{\mathrm{CE,perfect}}$ which, as a function of the variance $\sigma^2_{N,perfect}$ previously determined, can be written:

$$\sigma^2_{\mathrm{CE,perfect}} = \frac{1}{N}\left(\sigma^2_{N,perfect} + K - 1\right) \tag{14}$$

The following will be written:

$$\sigma^2_{CE,\mathrm{perfect}} = \sigma^2_0 \tag{15}$$

For an imperfect channel estimation, the signal to noise ratio Eb/No must be increased in order to obtain the same error rate. It is then written:

$$\sigma^2_{\mathrm{N,imperfect}} = \frac{\sigma^2_{\mathrm{N,perfect}}}{\lambda} \quad \text{with } \lambda > 1 \tag{16}$$

The term λ represents the loss in signal to noise ratio tolerated for an imperfect estimation. Fig. 3 shows its value X expressed in decibels: [redacted].

The variances of the total interferences $\sigma^2_{\mathrm{CE,perfect}}$ and $\sigma^2_{\mathrm{CE,imperfect}}$ respectively in the case of a perfect estimation and in the case of an imperfect estimation are assumed to be equal to the variance of the total interference σ^2_0. They therefore satisfy the following conditions: